2018 ACES

A Community on Ecosystem Services™

Natural Resources Benefitting People

Celebrating **10 years** of ACES!

In partnership with

ECOSYSTEM MARKETS
Making Them Work

ESP
Ecosystem Services Partnership

Abstract Book

Linking Science, Practice, and Decision Making

December 3 - 6, 2018 | Washington, D.C. Area

UF | IFAS
UNIVERSITY *of* FLORIDA

Welcome to ACES 2018!

On the behalf of A Community on Ecosystem Services (ACES) and our partners in Ecosystem Markets and the Ecosystem Services Partnership (ESP), we welcome you to the ACES 2018 Conference!

This is the 10-year anniversary of the first ACES conference! ACES conferences have been an important venue for sharing state-of-the-art ecosystem services science and practice since ACES was held in Naples, Florida in December 2008. Since then, the conference has been held every other year and has evolved as a critical destination to connect with colleagues and friends with expertise and interest across the wide spectrum of the ecosystem services community.

The focus of ACES 2018 is Natural Resources Benefitting People to emphasize the important connections between nature, science, and people. For this year's conference, we've provided a range of workshops, plenary sessions, and presentations – we anticipate that you will always find something that piques your interest. ACES 2018 will provide a rich venue for synthesizing ecosystem services related research, methods, tools, and policies. There will be more than 400 participants, coming from over 25 countries, including leaders from all levels of government, NGO's, non-profits, academia, and the private business and financial sectors. We encourage each of you to reach out and make a concentrated effort to interact with those who have an expertise different than your own. Take this opportunity to expand your experience and knowledge!

We are very excited to welcome our 13 esteemed 2018 Fellows: graduate students from around the world who will help lead ecosystem services science and practices going forward! Since ACES 2010, ACES Fellows have been chosen from a very competitive (and long!) list of candidates, and each receives partial or full funding to attend ACES. Take the time to read their bios, either online or in this program book, and make a point to stop by their oral or poster presentation.
These students represent the future of the ecosystem services community and this is our opportunity to help mentor them along the way!

We wish to thank the supporting and partnering organizations and the Steering and Early Career Advisory Committee members for their outstanding efforts to make ACES 2018 a success. Their insights and support are greatly appreciated, and this conference could not have happened without them. We especially wish to thank the staff of the UF/IFAS Office of Conferences and Institutes for their continued (since 2008) extraordinary efforts in organizing conference logistics and making ACES 2018 possible, and for the strong leadership of Kristin Zupancic in this endeavor. Her exceptional patience with the Planning Committee and her skillsets are remarkable!

We anticipate that ACES 2018 will provide many opportunities to share science advances and state-of-the-art practices within the ecosystem services community. As always, as the week proceeds, remember to attend sessions that are outside of your field, and be sure to network, meet old friends, make new friends, and establish new interdisciplinary relationships.

Thank you for attending ACES 2018!

Dianna Hogan, Ph.D.
Deputy Regional Director for Science,
Southeast Region, U.S. Geological Survey
Planning Committee Chair, ACES 2016, 2018

Frank Casey, Ph.D.
Economist
Ecosystem Services Lead
Science and Decisions Center, U.S. Geological Survey
Planning Committee Chair, ACES 2012, 2014

Chris Hartley, Ph.D.
Senior Environmental Markets Analyst
Office of Environmental Markets
U.S. Department of Agriculture

Shonté Jenkins
Science Information Specialist
Science and Decisions Center, U.S. Geological Survey

Marc Russell, Ph.D.
Assistant Lab Director, NHEERL
Matrix Interface, SHC
U.S. Environmental Protection Agency

Carl Shapiro, Ph.D.
Director
Science and Decisions Center, U.S. Geological Survey
Planning Committee Chair, ACES 2008, 2010

RECONCILING LOCAL DEMANDS AND CONSERVATION TARGETS IN AMAZONIA

Daniel Pinillos [1, 2], *René Poccard*[2], *Marc Corbeels*[2], *Felix Bianchi*[1], *Mário de Oliveira* [3], *Rogier Schulte*[1]

[1]Farming Systems Ecology, Wageningen University and Research, The Netherlands

[2] Centre de Cooperation Internationale en Recherche Agronomique pour le Développement, CIRAD, UPR AIDA, Montpellier, France. SupAgro, Univ Montpellier, Montpellier, France.

[3] Núcleo de Apoio a Pesquisa e Transferência de Tecnologias, NAPT Belém/Brasília, Embrapa Amazônia Oriental

Deforestation rates in Brazil have undergone an unprecedented decline of more than 70% since 2005. Changes in policies, institutions and social movements provided a platform for this radical slowdown. Moreover, in 2012 a revised version of the Brazilian Forest Code determined that all rural properties in the Amazons should maintain between 50-80% of their area as native forest, known as Legal Reserves (LR), and 100% of the riparian forest. To achieve these targets, deforested properties should subscribe to an Environmental Regularization Plan (PRA).

Nevertheless, recent research indicates that biodiversity and carbon storage are still decreasing in areas of eastern Amazonia due to forest fragmentation and degradation. The current government policies and mechanisms are not efficient at incentivizing PRA compliance, nor at connecting forest patches to create a structural network of connected habitats and optimize carbon storage. The Paragominas municipality is one of the oldest frontier towns in this region heading towards agricultural intensification and environmental conservation. We explore land use change scenarios in this area to decrease forest fragmentation while taking into account local economic demands.

First, we applied the Functional Land Management framework to assess the spatial variability of three ecosystem services (ES): commodity production, carbon storage and habitat for biodiversity. This assessment was linked to a farm typology based on a survey of 40 farms, to farmers' perceptions on LR and ES using the Q methodology, and to jurisdictional agricultural and environmental policies. Land use changes were modelled in ArcGIS by simulating forest restoration in deforested areas with poor soils, and agricultural intensification on soils suitable for agriculture currently covered by degraded forest. Using FRAGSTAT 3.3 for spatial pattern analysis, we explored landscape scenarios where forest fragmentation decreases as compared to the current status.

The goal of these scenarios was to optimize the allocation of agricultural land and forested areas according to soil characteristics, farm type and ES supply. Our interviews suggest that landowners show interest in building efficient landscapes based on these scenarios, as an alternative to the Forest Code requirements, which they perceive as an imposition that weakens local production. Thus, our models intend to reconcile federal conservation goals with local demands by taking a jurisdictional approach to harmonize local development, commodity chains and ES.

This study combines technical aspects of ES with local demands for ES by actors in the area, and thus contributes to the ongoing discussion of an integrated zoning for the agricultural sector in eastern Amazonia. This is nevertheless a complex process that involves a multidimensional assessment and ample negotiations among an array of stakeholders across scales.